

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>620024-2</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/US 02/ 23155</b>	International filing date (day/month/year) <b>19/07/2002</b>	(Earliest) Priority Date (day/month/year) <b>23/07/2001</b>
Applicant <b>THE BOARD OF REGENTS OF THE UNIVERSITY OF OKLAHOMA</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 22

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ Non of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/23155

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C01B31/02 B01J23/882

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C01B B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, COMPENDEX, INSPEC, CHEM ABS Data, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ALVAREZ W E ET AL: "Synergism of Co and Mo in the catalytic production of single-wall carbon nanotubes by decomposition of CO" CARBON, vol. 39, no. 4, April 2001 (2001-04), pages 547-558, XP004319871 ISSN: 0008-6223 the whole document ---	1-25
X	WO 00 73205 A (HARWELL JEFFREY H ;UNIV OKLAHOMA STATE (US); ALVAREZ WALTER (US);) 7 December 2000 (2000-12-07) cited in the application examples 1,5,9 --- -/--	1-25

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*G\* document member of the same patent family

Date of the actual completion of the international search

3 July 2003

Date of mailing of the international search report

21/07/2003

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DE BOER M ET AL: "Cobalt-molybdenum interaction in CoMo/SiO<sub>2</sub> catalysts: a CO-oxidation study"</p> <p>PROCEEDINGS OF THE 12TH INTERNATIONAL SYMPOSIUM ON REACTIVITY OF SOLIDS; MADRID, SPAIN SEP 24-30 1992, vol. 63-65, 24 September 1992 (1992-09-24), pages 736-742, XP009013242</p> <p>Solid State Ionics; Solid State Ionics Sep 1993</p> <p>"Results and discussion" figure 3; table 2</p>	1-3, 22
X	<p>KITIYANAN B. ET AL: "Controlled production of single-wall carbon nanotubes by catalytic decomposition of CO on bimetallic Co-Mo catalysts"</p> <p>CHEMICAL PHYSICS LETTERS, vol. 317, 4 February 2000 (2000-02-04), pages 497-503, XP002149234</p> <p>the whole document</p>	1-25
A	<p>BANDOW S. ET AL: "Effect of the growth temperature on the diameter distribution and chirality of single-wall carbon nanotubes"</p> <p>PHYSICAL REVIEW LETTERS, vol. 80, no. 17, 27 April 1998 (1998-04-27), pages 3779-3782, XP002246341</p> <p>figure 2</p>	4, 10, 16
A	<p>DATABASE COMPENDEX 'Online! ENGINEERING INFORMATION, INC., NEW YORK, NY, US;</p> <p>CHATURVEDI S ET AL: "Properties of pure and sulfided NiMoO<sub>4</sub> and CoMoO<sub>4</sub> catalysts: TPR, XANES and time-resolved XRD studies"</p> <p>Database accession no. EIX99044490981</p> <p>XP002246342</p> <p>abstract</p> <p>&amp; PROCEEDINGS OF THE 1997 MRS FALL SYMPOSIUM; BOSTON, MA, USA DEC 2-4 1997, vol. 497, 2 December 1997 (1997-12-02), pages 41-46,</p> <p>Mater Res Soc Symp Proc; Materials Research Society Symposium - Proceedings; Recent Advances in Catalytic Materials 1998 MRS, Warrendale, PA, USA</p>	1, 4, 10, 16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/23155

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0073205	A	07-12-2000	US 6333016 B1 25-12-2001
			AU 5462200 A 18-12-2000
			BR 0011106 A 05-03-2002
			CA 2375887 A1 07-12-2000
			CN 1360558 T 24-07-2002
			EP 1192104 A1 03-04-2002
			JP 2003500326 T 07-01-2003
			WO 0073205 A1 07-12-2000
			US 2002165091 A1 07-11-2002